

Spatial and Habitat Selection response of black bears to the Wallow Fire in the White Mountains of Arizona

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Arizona Game and Fish Department

May 23, 2012



Thanks to...



Apache-Sitgreaves National Forest



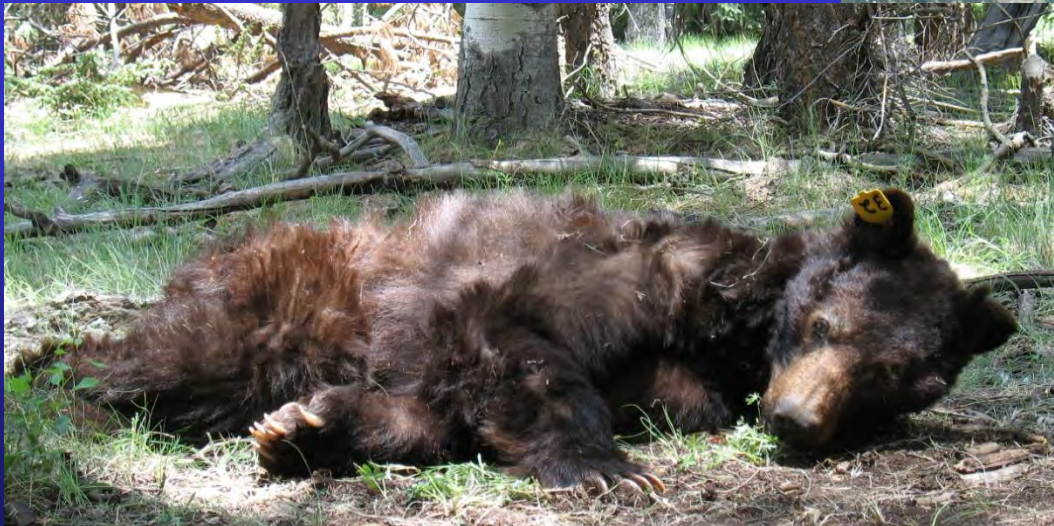
Eastern Arizona Counties Resource Advisory Committee



Federal Aid in Wildlife Restoration

Background

- Studying black bear habitat selection in relation to Wild land Urban Interface (WUI) treatments near Alpine, Nutrioso, and Greer



Study Area

- Land ownership: Forest Service, State, and private
- Elevation: 1300 m – 3000 m
- Average monthly temp: -11°C – 28°C
- Precipitation: 52.8 cm annually, 139.4 cm snow
- Vegetation: Rocky Mt montane and subalpine conifer forests



Status- May 2011

- We had 8 black bears that we had been monitoring from 1 week to nearly 3 years
 - 3 females and 5 males
 - Fitted with either spread spectrum or satellite GPS collars
- Collected microhabitat characteristics at well over 100 sites

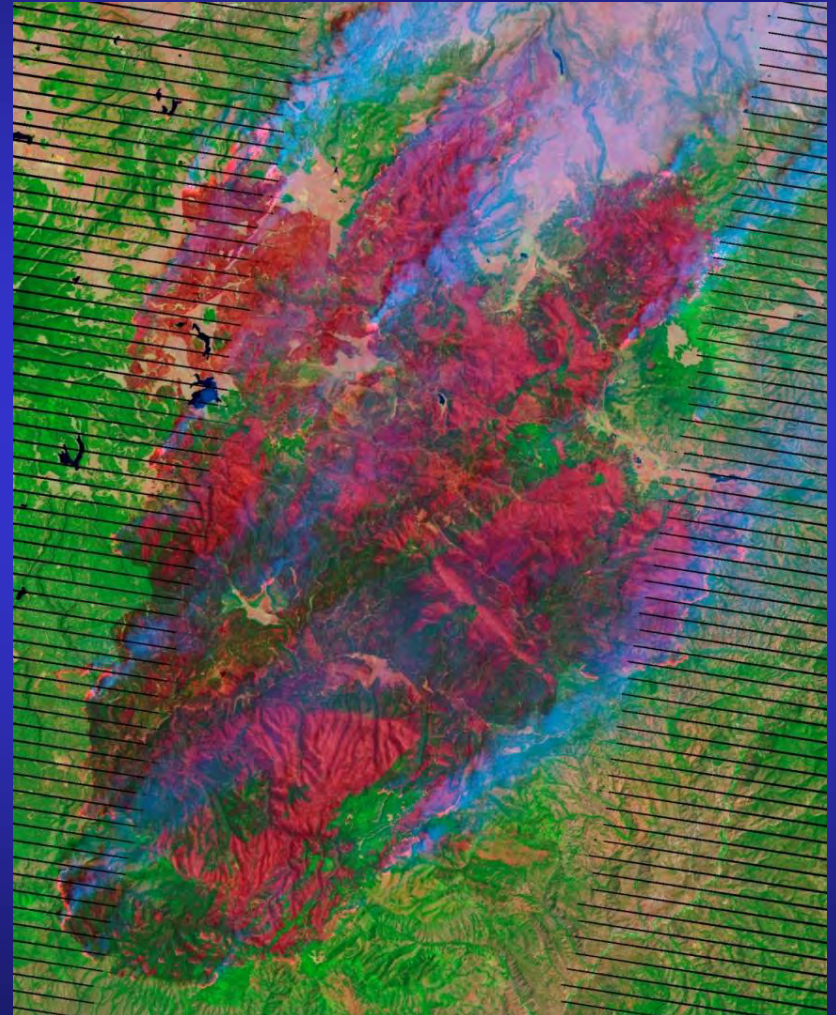


Then the Wallow fire happened...



The Wallow Fire

- Started May 29, 2011 Full containment July 8, 2011
- Burned more than 538,000 acres
- Largest wildlife in AZ history
- Human caused



The Wallow Fire

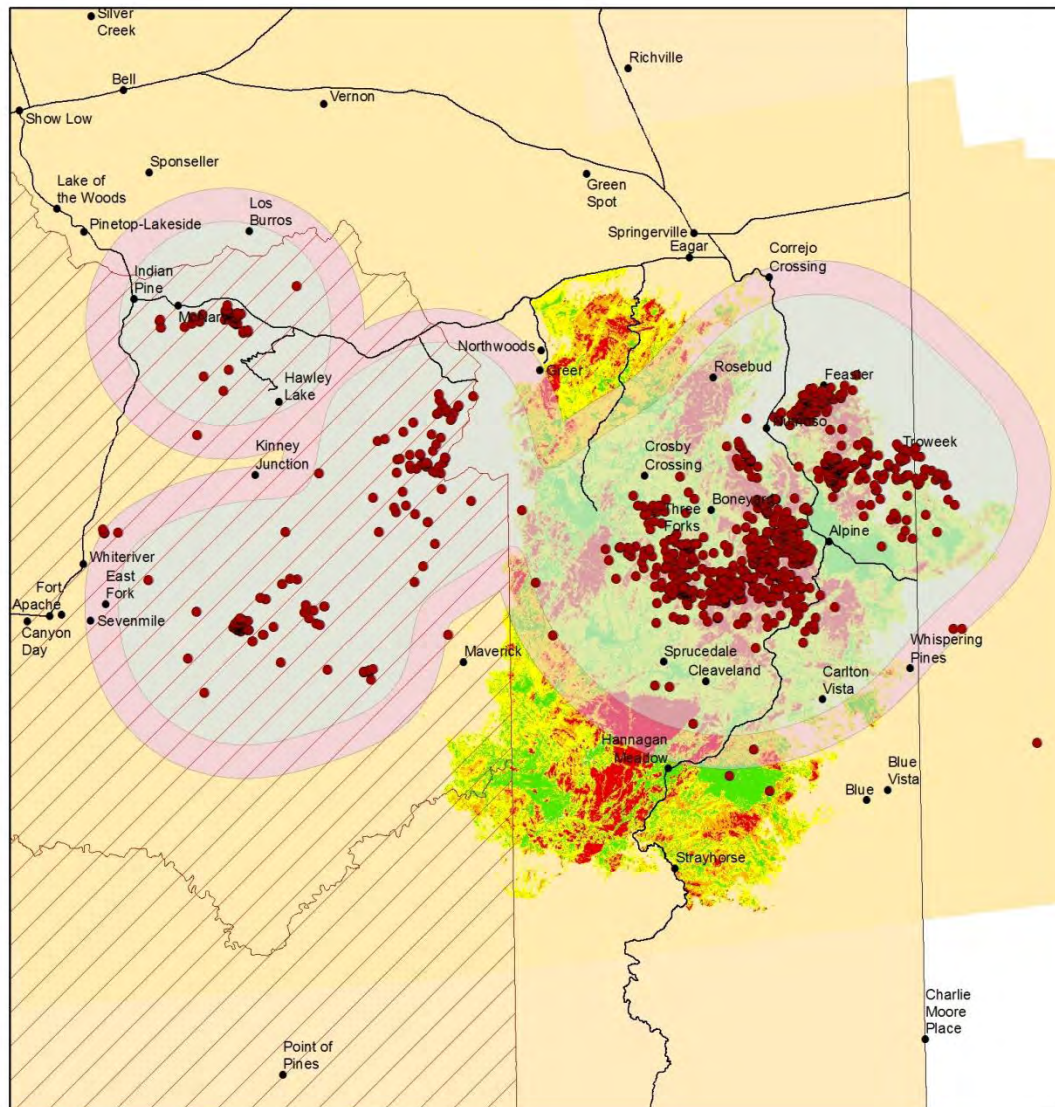
- Burned in a mosaic pattern
 - ~20% unburned/very low
 - ~45% low severity
 - ~18% moderate severity
 - ~17% high severity



Methods

- We examined movements and habitat use of bears caught before the fire started
- Movements during and after the fire
- Use of different fire severities:
 - During fire (May 29- July 8)
 - Post fire (July 9- August 17)
 - Re-Vegetation (August 18- November 16)
- Separately we looked at bears that were caught post fire





Legend

- Bear Locations
- ▭ Tribal Boundary
- ▭ 95 % Kernel
- ▭ Kernel Buffer ~ 2 miles
- ▭ Unchanged / Very low severity
- ▭ Low severity
- ▭ Moderate severity
- ▭ High severity
- ▭ Outside fire boundary

Habitat Availability for
Black Bear during and after
the Wallowa Fire, 2011



Mortality/Injuries

- No known mortality of collared animals
- One unmarked bear was found badly burned and was euthanized
- We caught 6 bears after the fire; none showed signs of injury from the wildfire and 5 were in good body condition

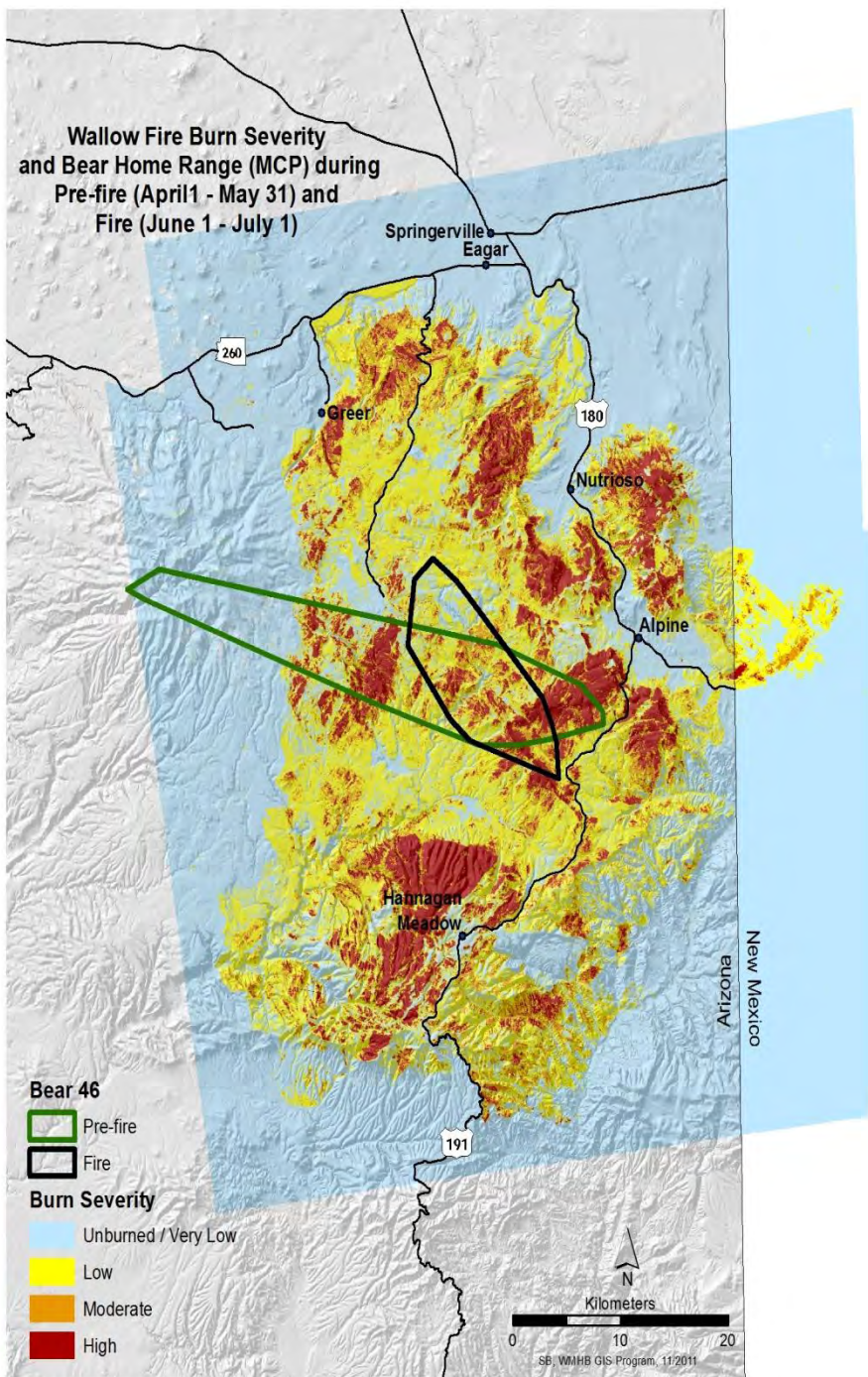


Caught September 11, 2011

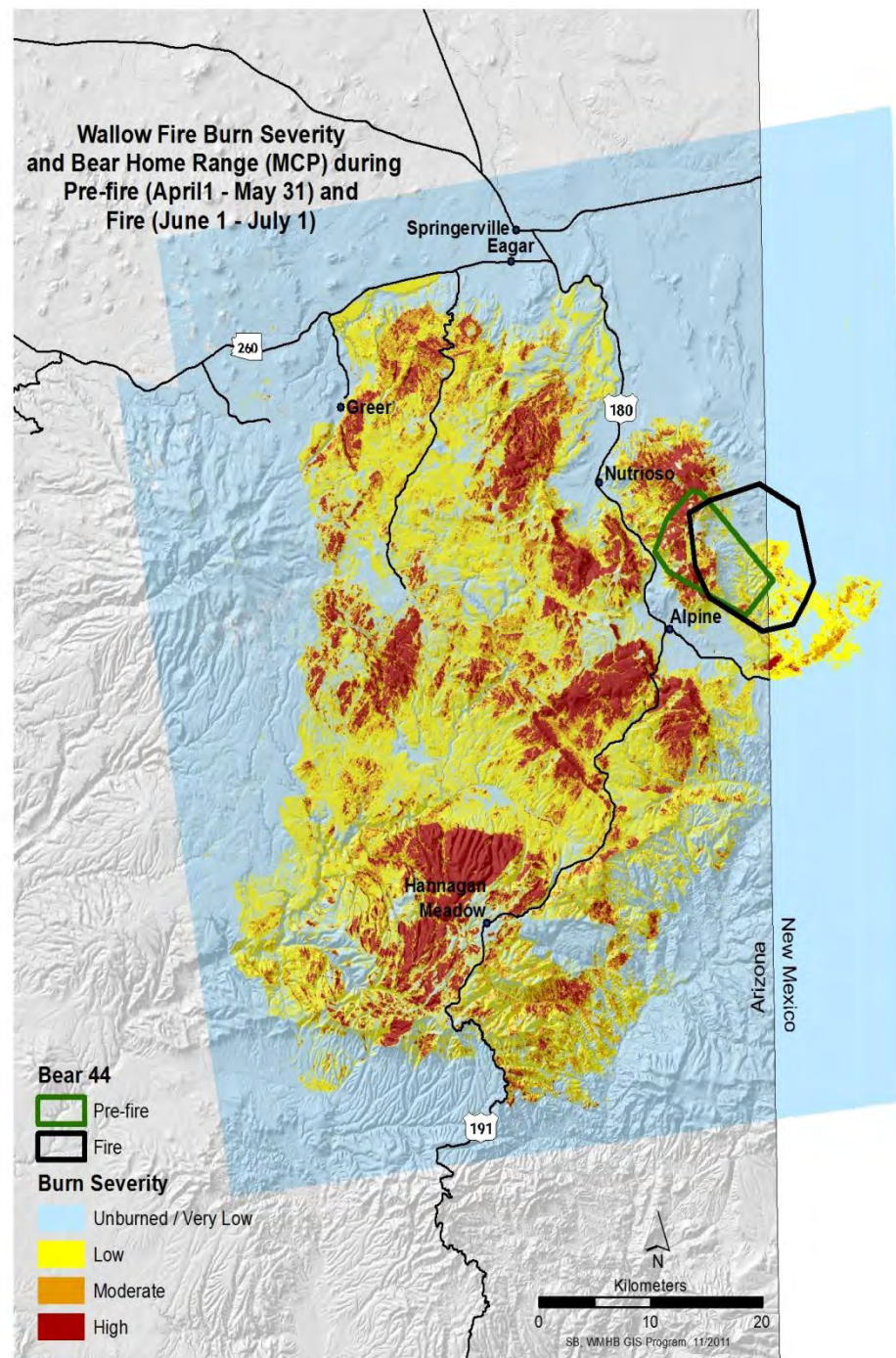


Caught July 27, 2011

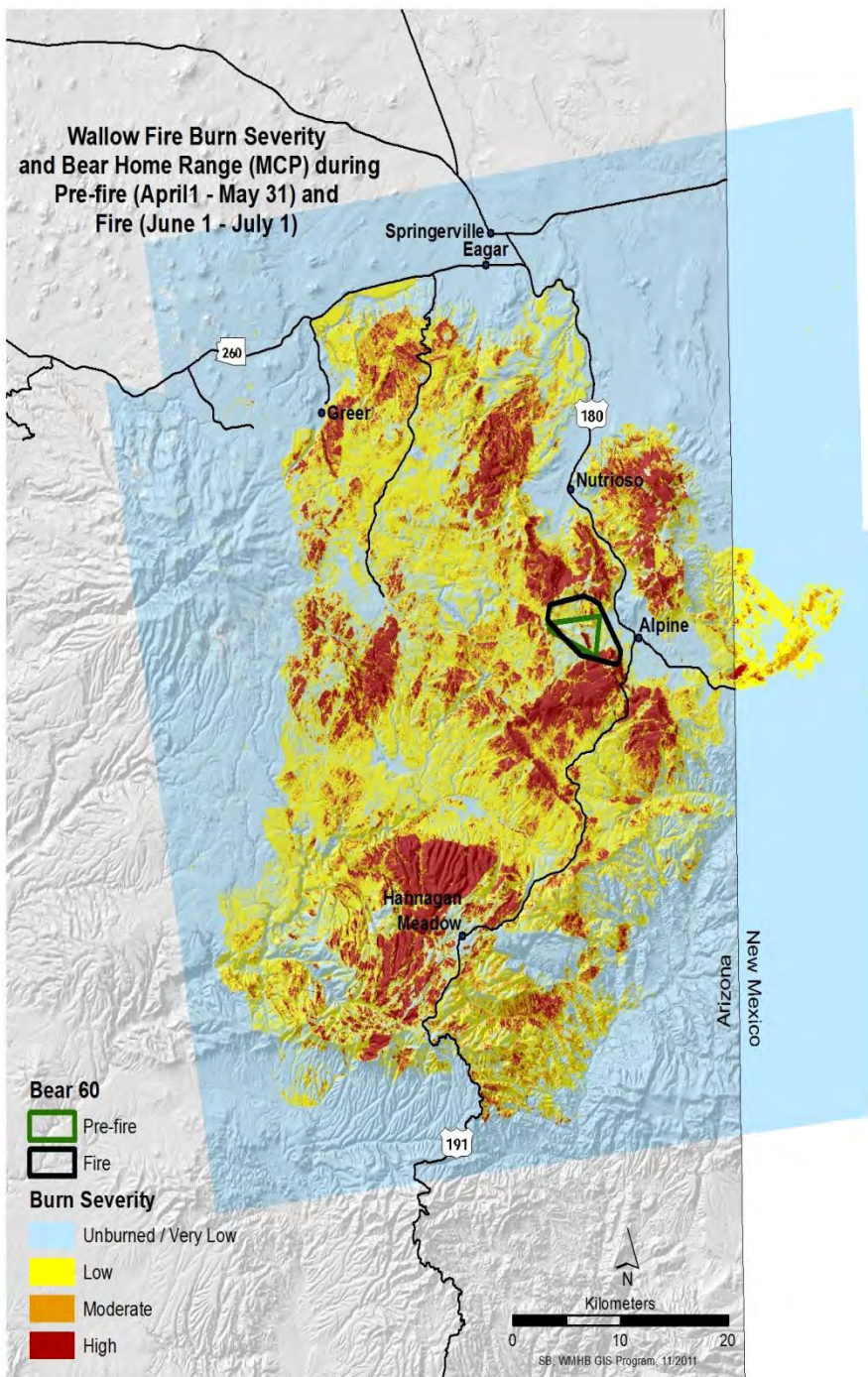
**Wallow Fire Burn Severity
and Bear Home Range (MCP) during
Pre-fire (April 1 - May 31) and
Fire (June 1 - July 1)**



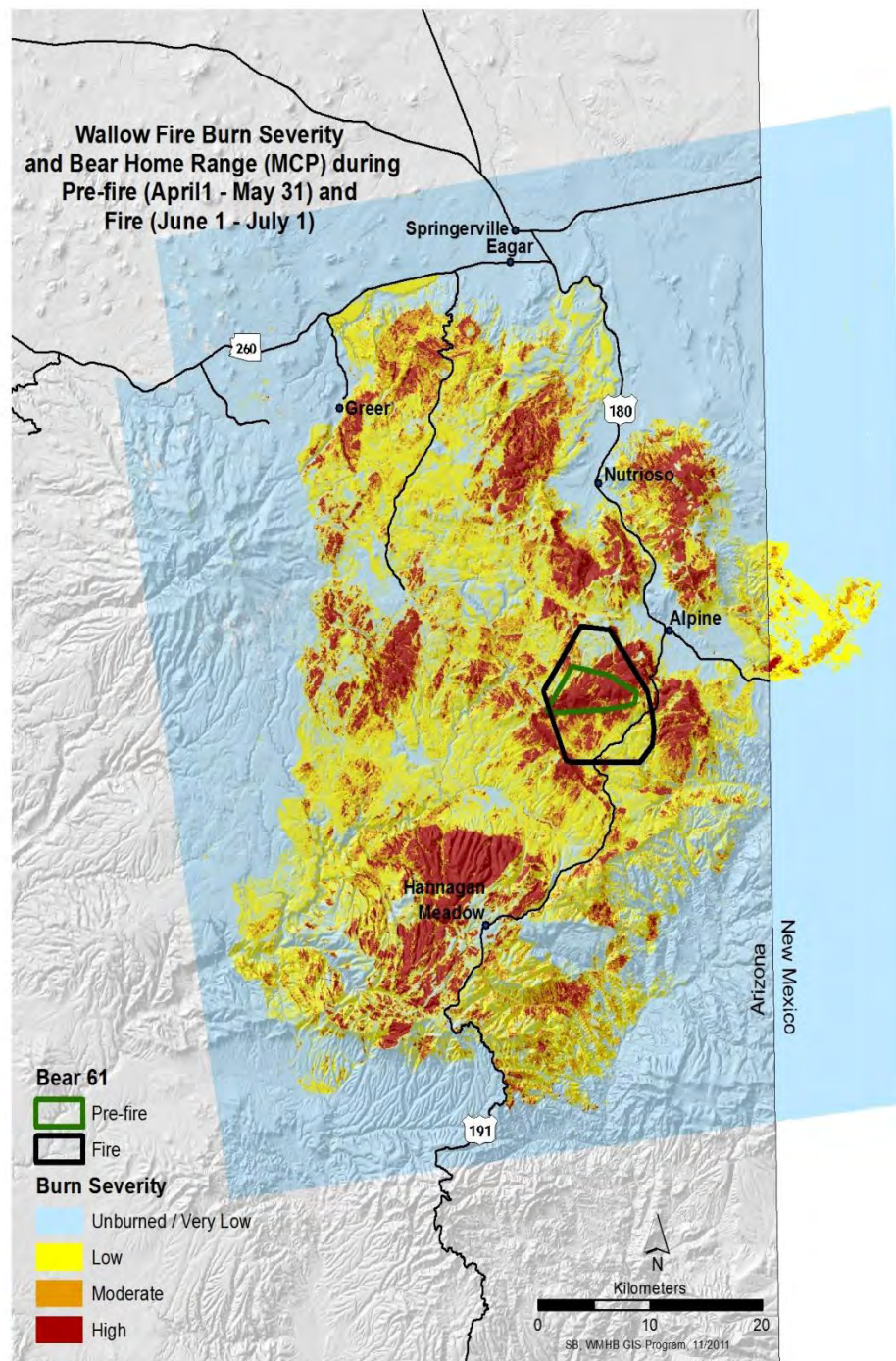
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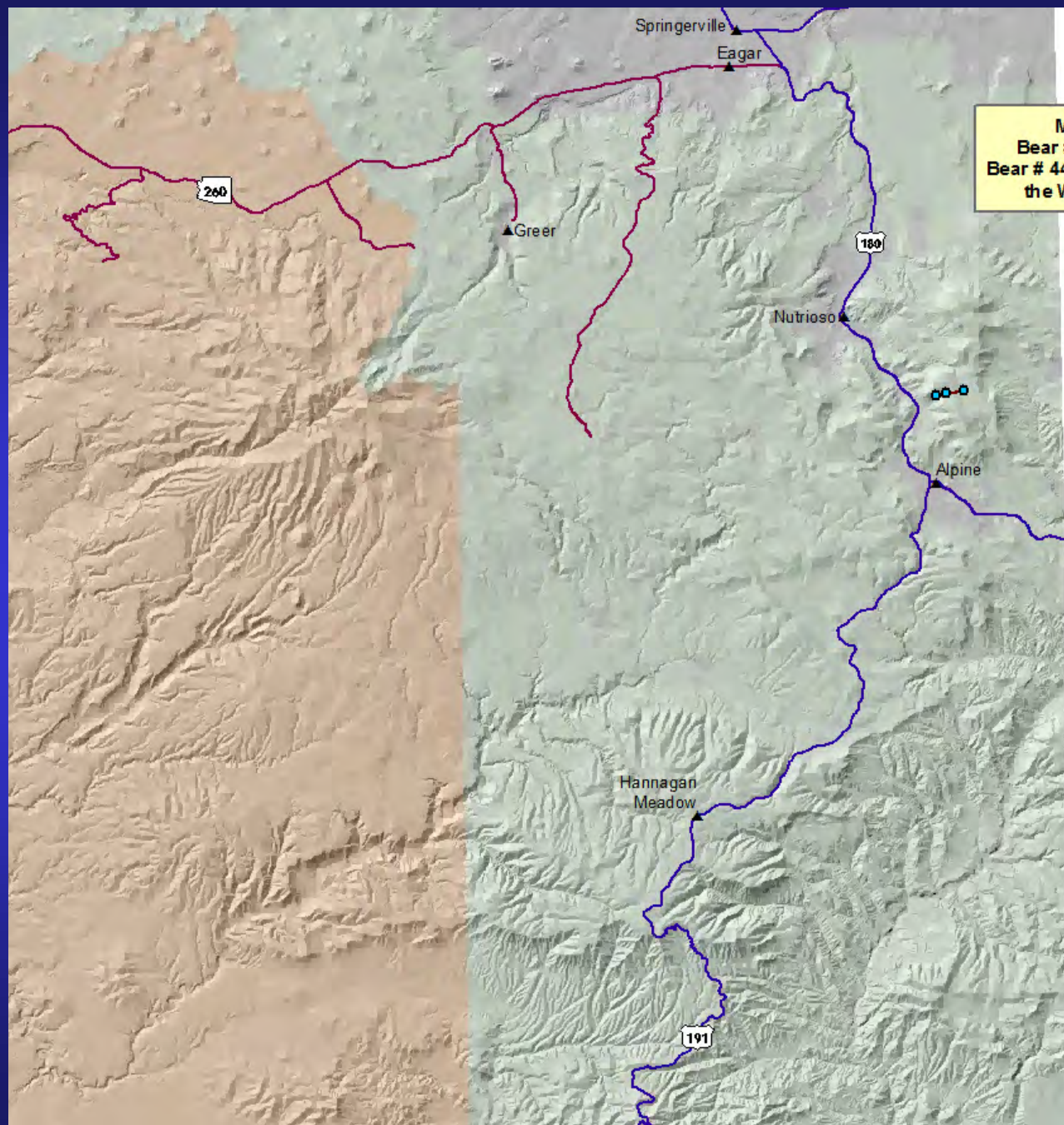


Wallow Fire Burn Severity and Bear Home Range (MCP) during Pre-fire (April 1 - May 31) and Fire (June 1 - July 1)

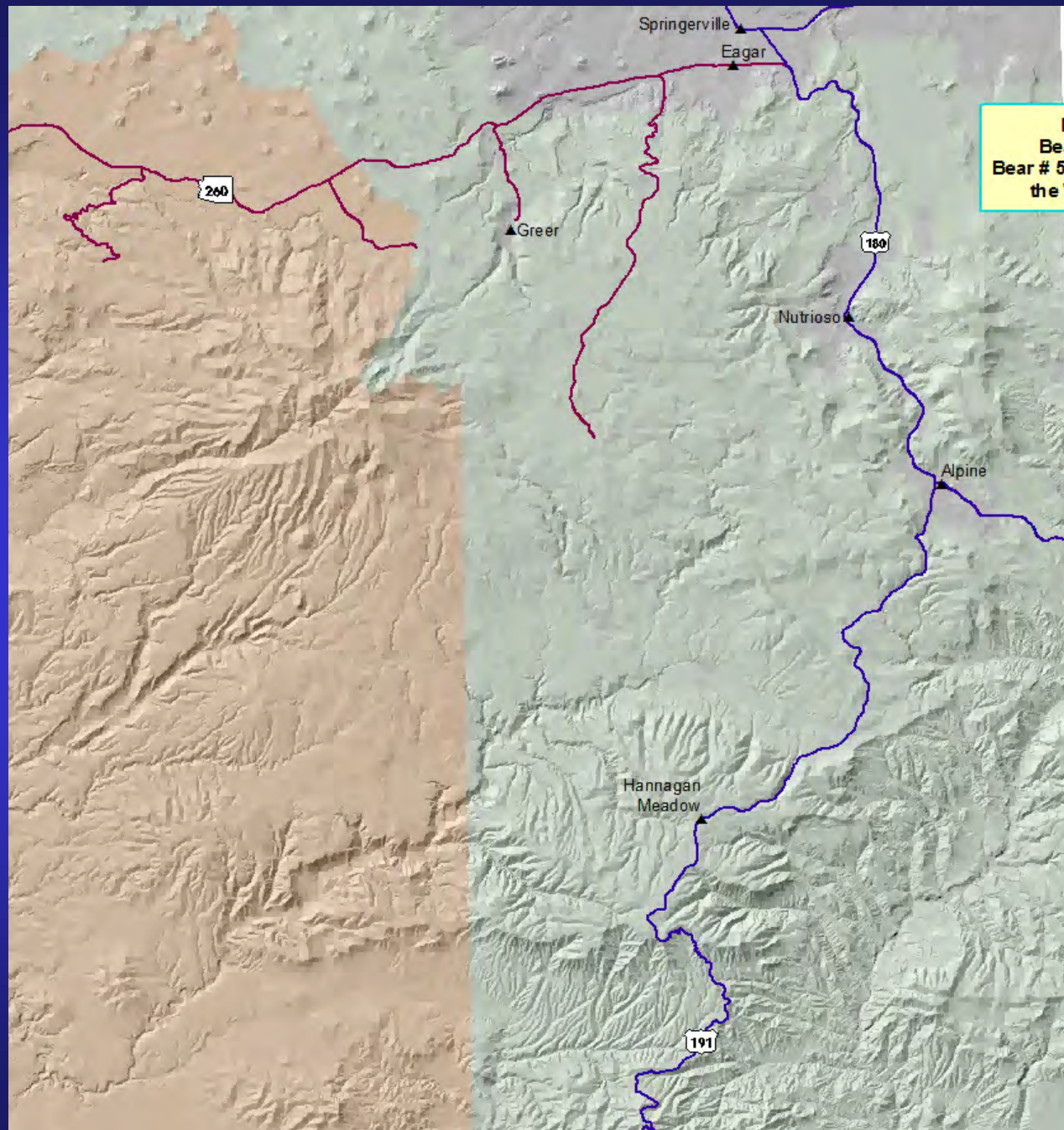


Wallow Fire Burn Severity and Bear Home Range (MCP) during Pre-fire (April 1 - May 31) and Fire (June 1 - July 1)





**Movement for
Bear # 40 (orange) and
Bear # 44 (blue) in relation to
the Wallow Fire, 2011**



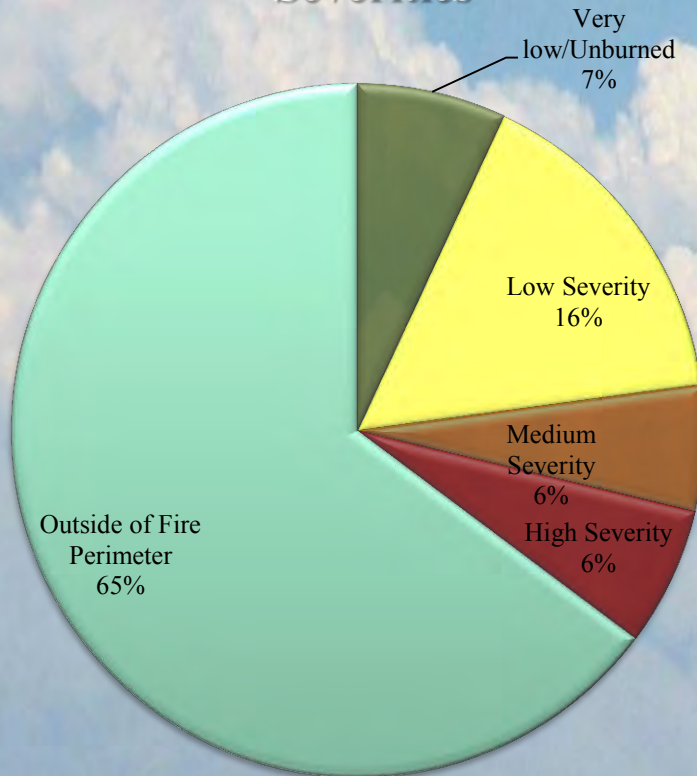
Movement for
Bear # 61 (red) and
Bear # 52 (blue) in relation to
the Wallow Fire, 2011



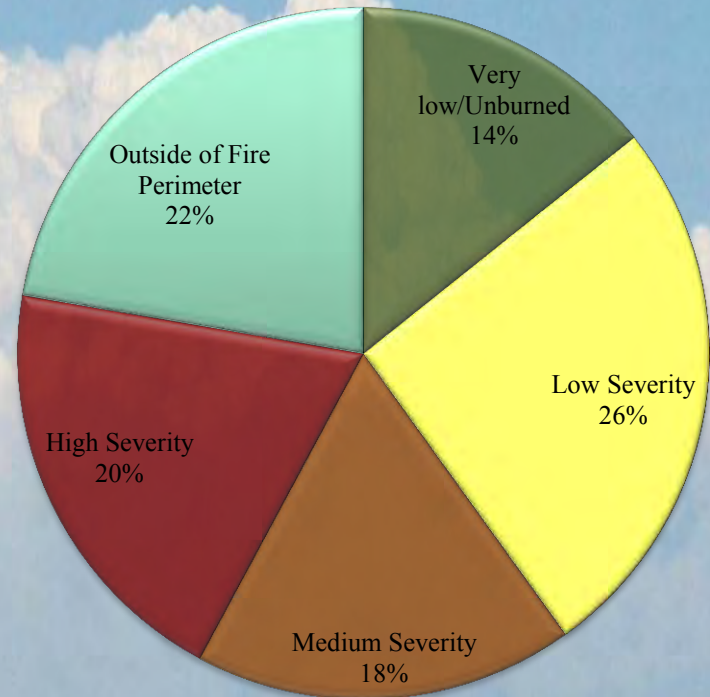
During the Wallow Fire

May 29- July 8

Availability of Different Fire Severities



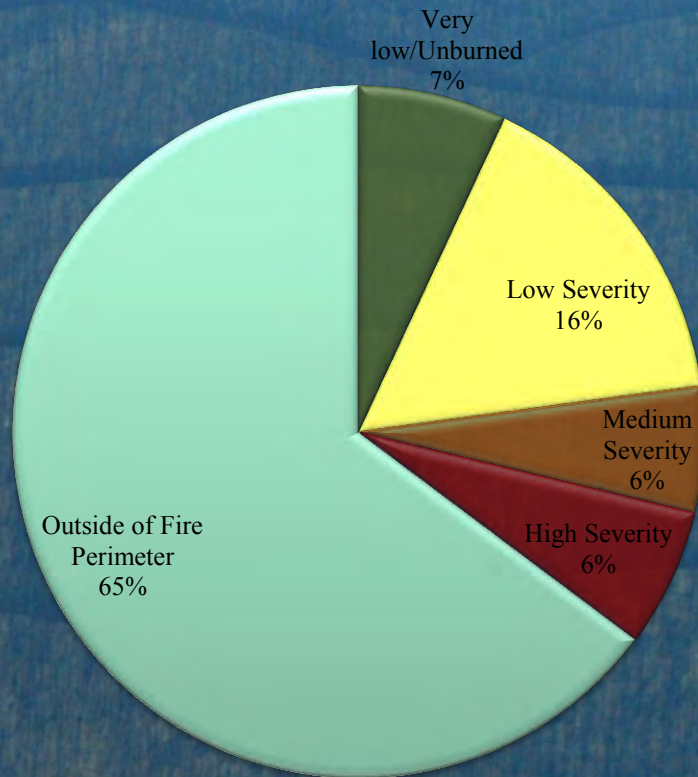
Bear use of Fire Severities- During Fire



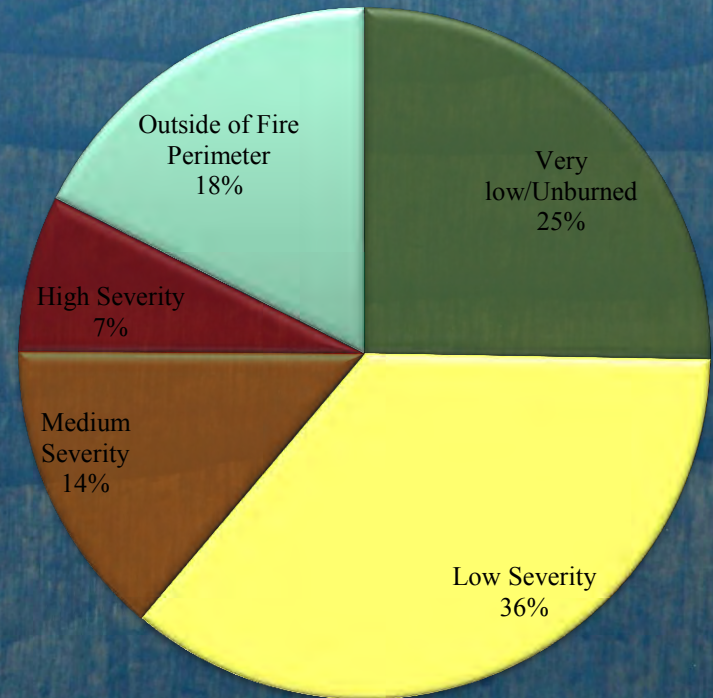
Wallow Fire- post fire

July 9- August 17

Availability of Different Fire Severities



Bear use of Fire Severities- Post Fire



Wallow Fire- post fire

- 4 million lbs of native seed spread onto 81,124 acres
- 36,062 acres were straw mulched



Wallow Fire- post fire

- The rains began in early July and the start of the green up soon followed



July 11, 2011



Early July 2011



Early September 2011

Wallow Fire- post fire

- By September results of aerially seeding and mulching was evident, however some areas were still barren of vegetation



September 24, 2011



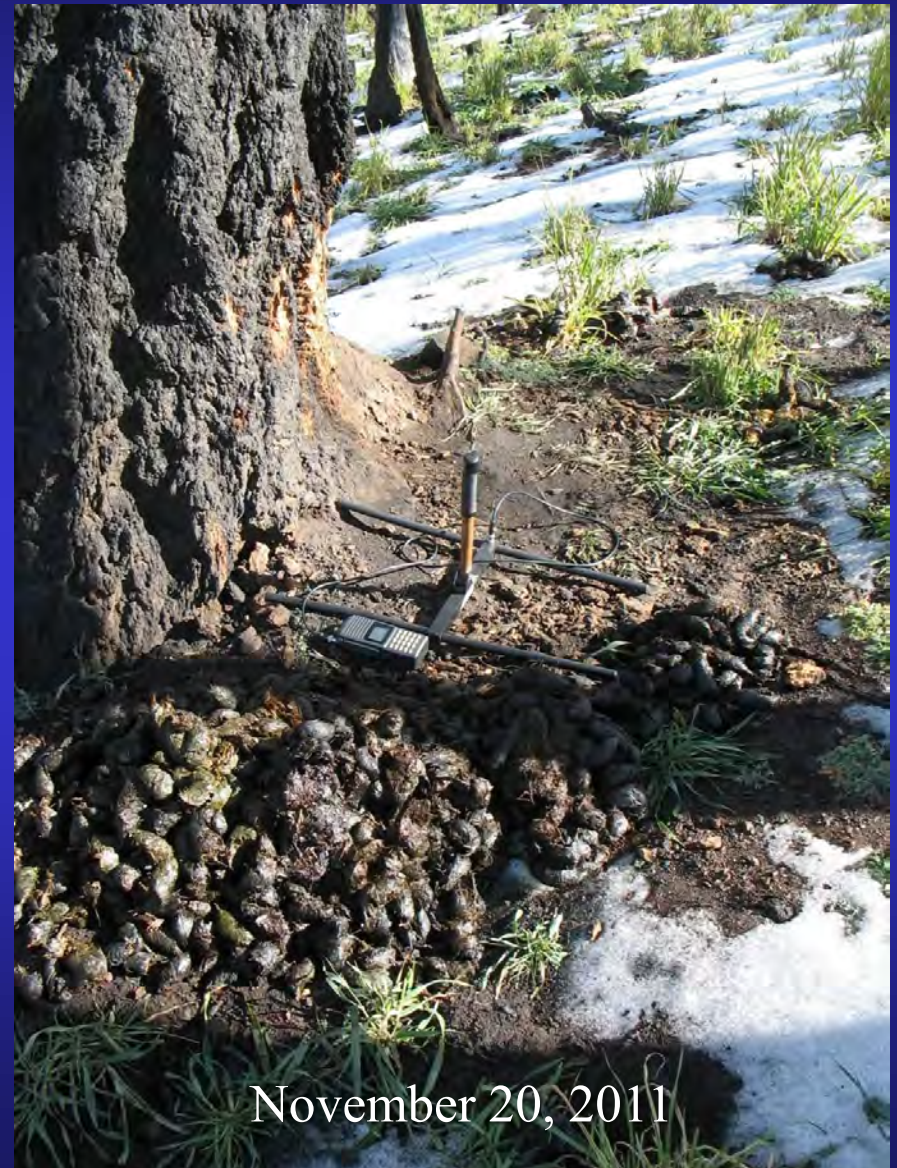
September 24, 2011



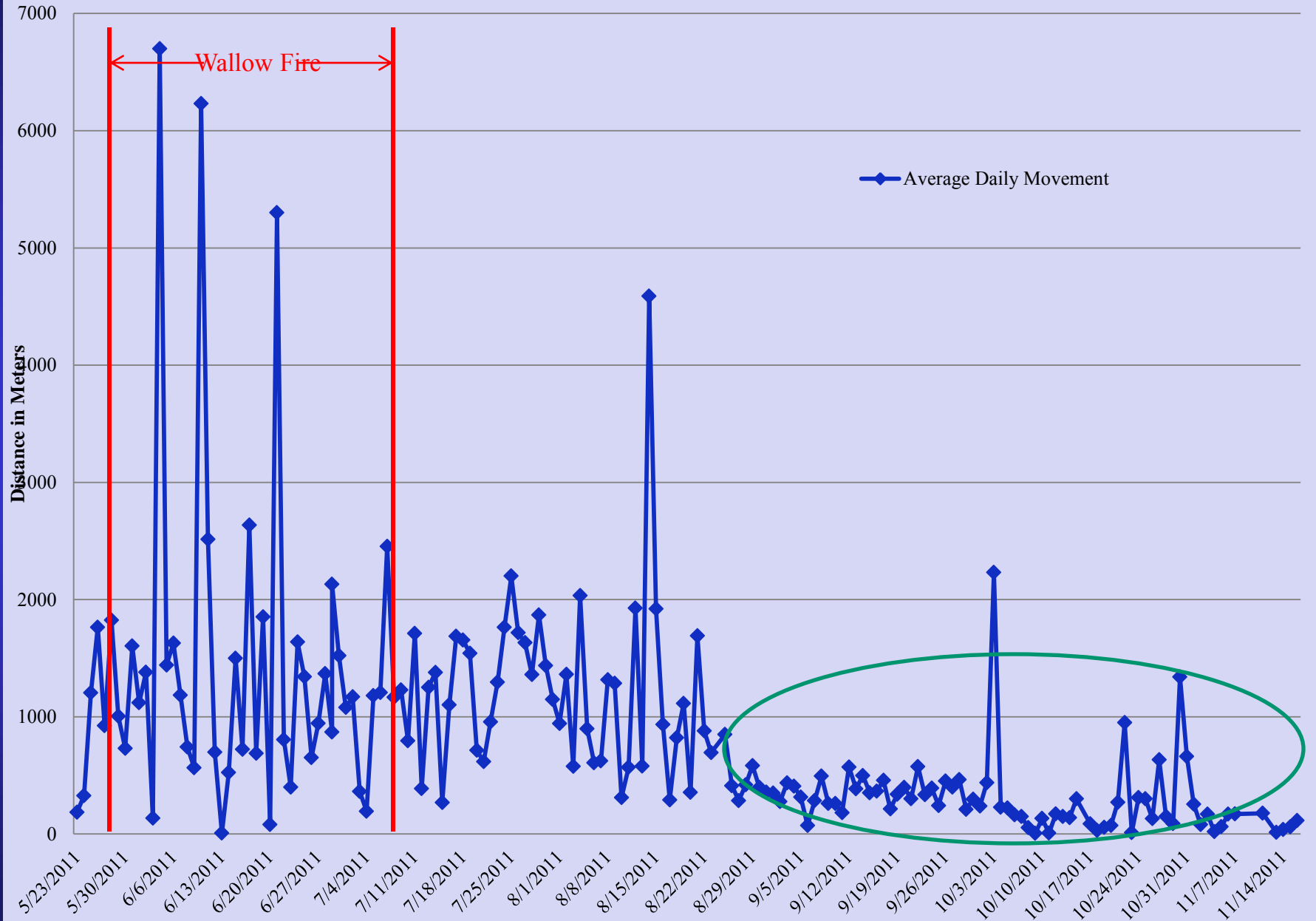
September 25, 2011

Wallow Fire- post fire

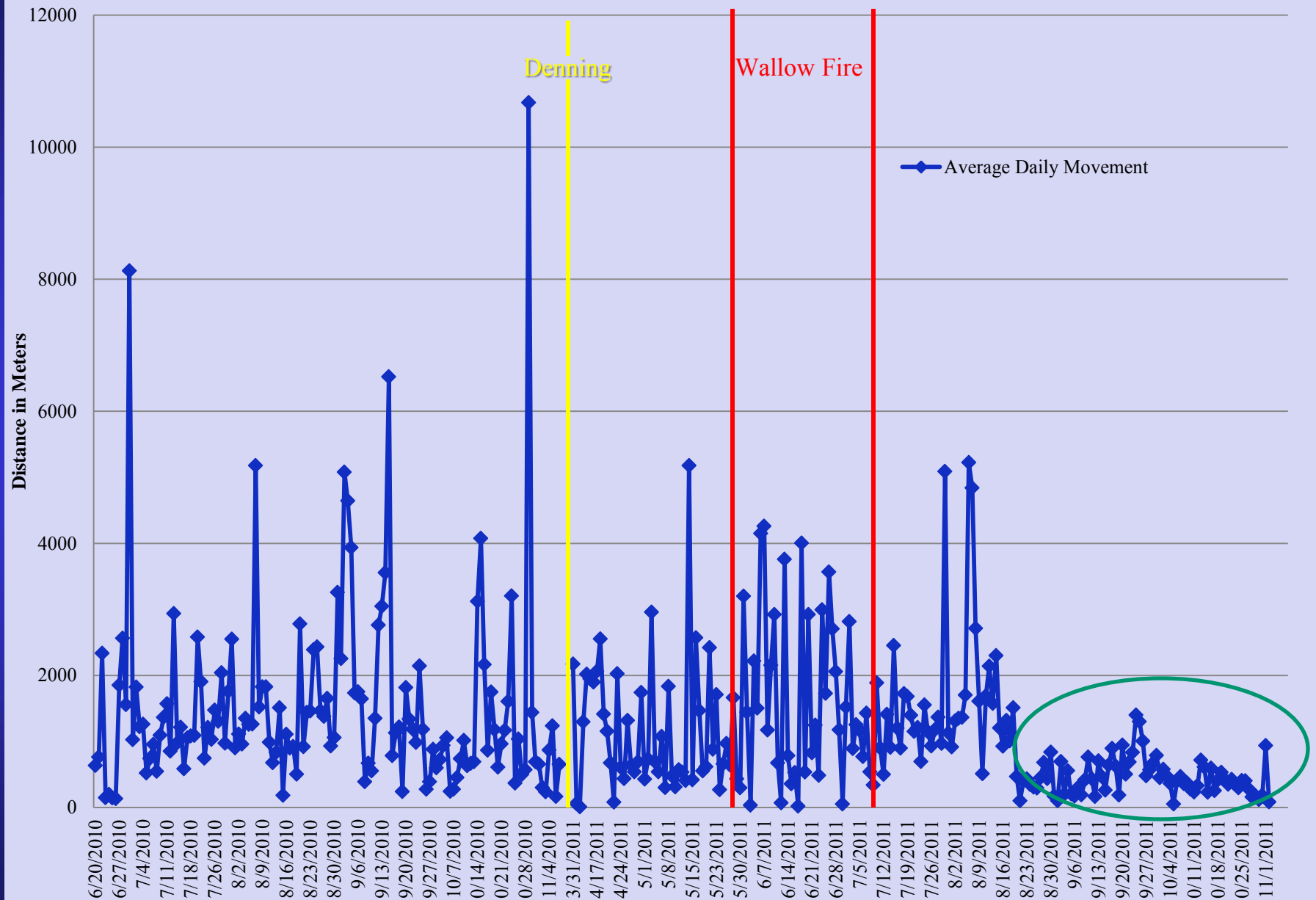
- Some marked bear locations appeared to be associated with these areas of green up



Black Bear Movements- Bear 61 Female



Black Bear Movements- Bear 44 Male

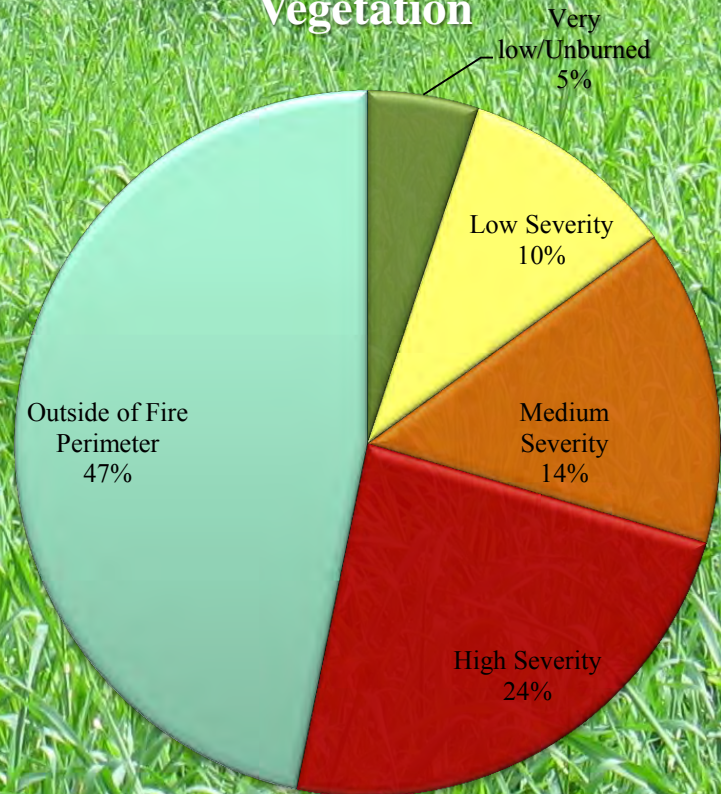
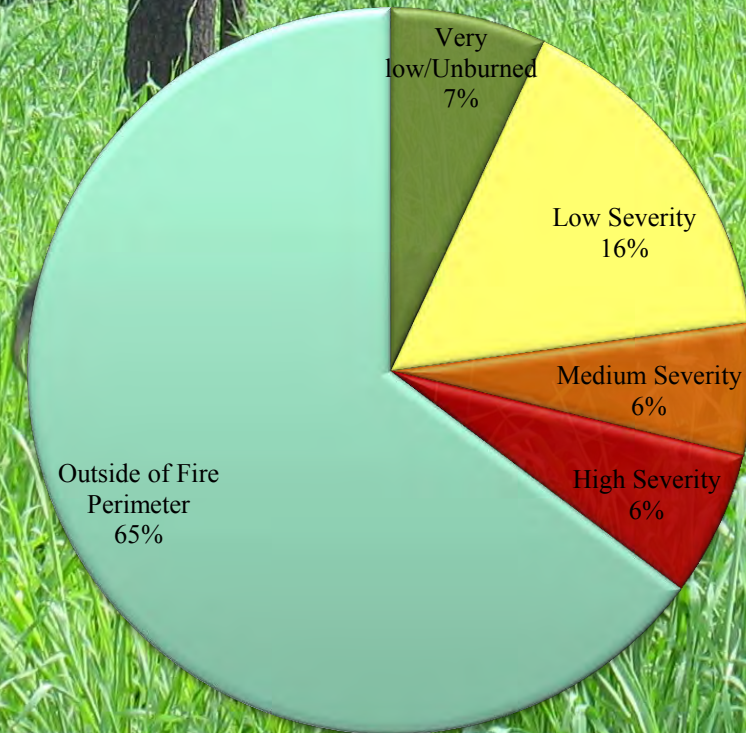


Wallow Fire- post fire

August 18- November 16

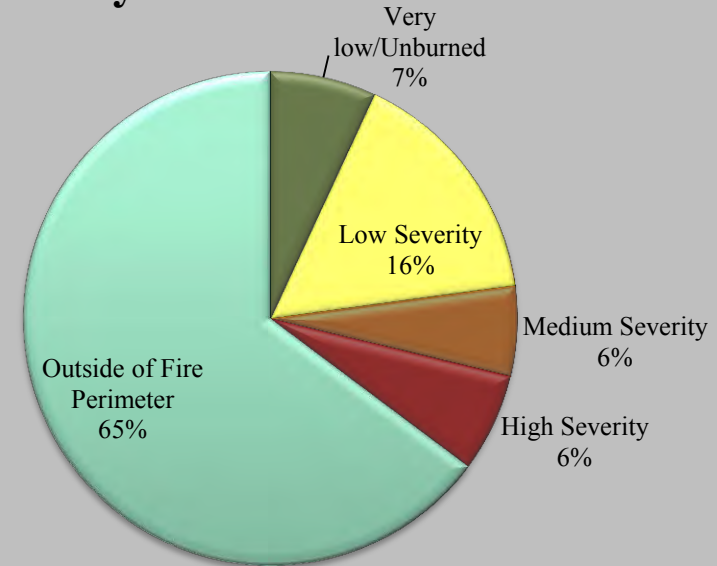
Availability of Different Fire Severities

Bear use of Fire Severities- Re-Vegetation

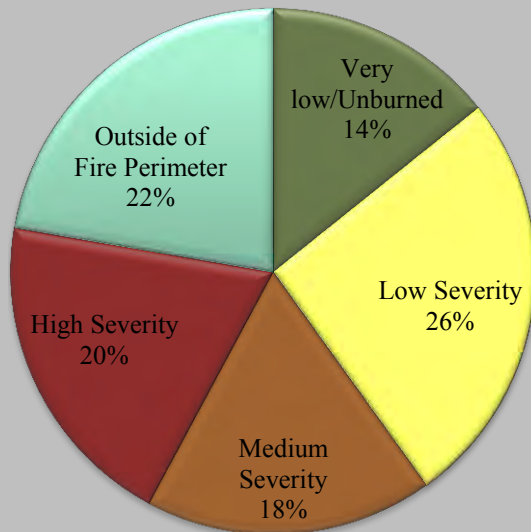


Bear Use of Fire Severities

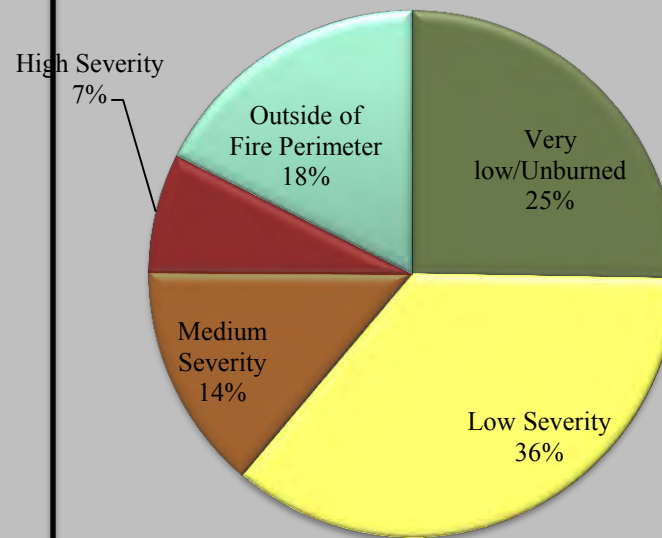
Availability of Different Fire Severities



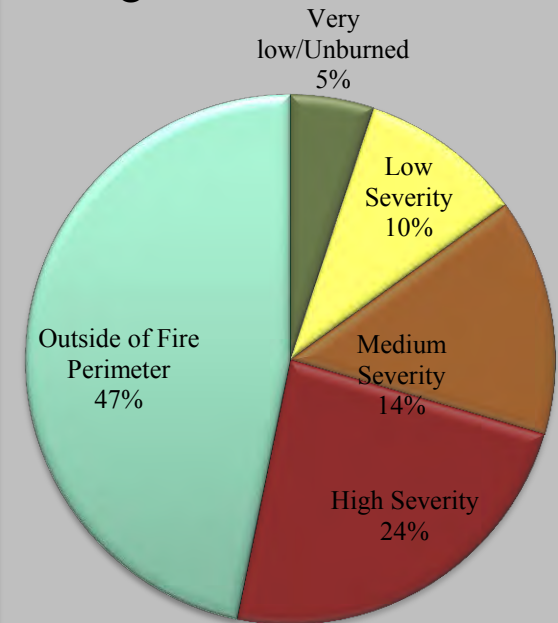
Use- During Fire May 29- July 8



Use- Post Fire July 9- August 17



Use- Re-Vegetation August 18- November 16

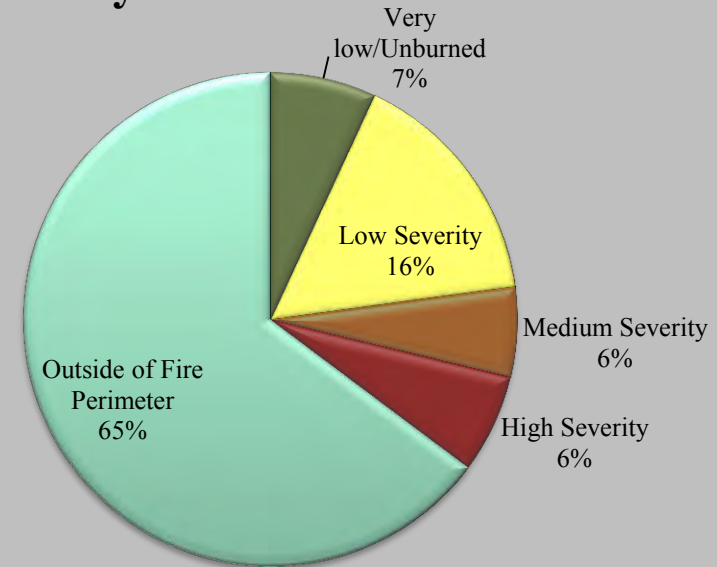


Bear Use of Fire Severities

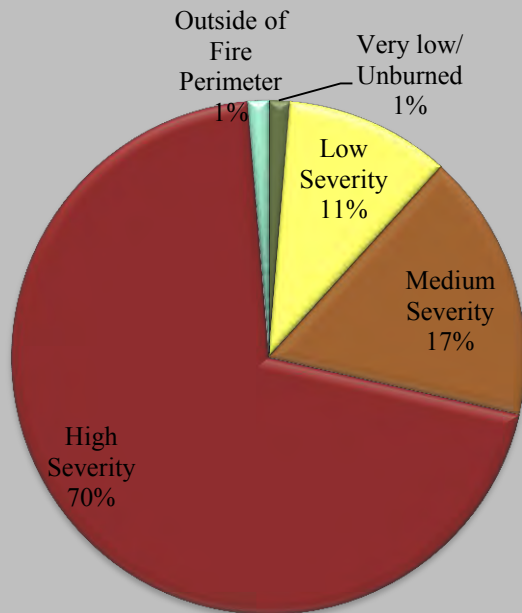
Re-Vegetation

August 18-November 16

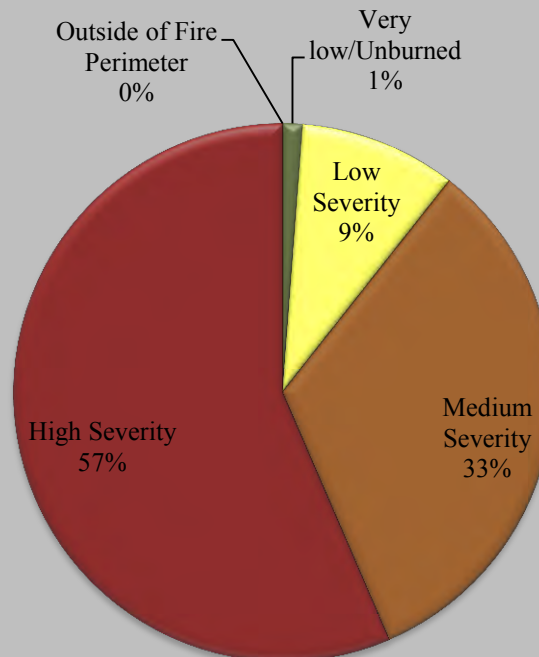
Availability of Different Fire Severities



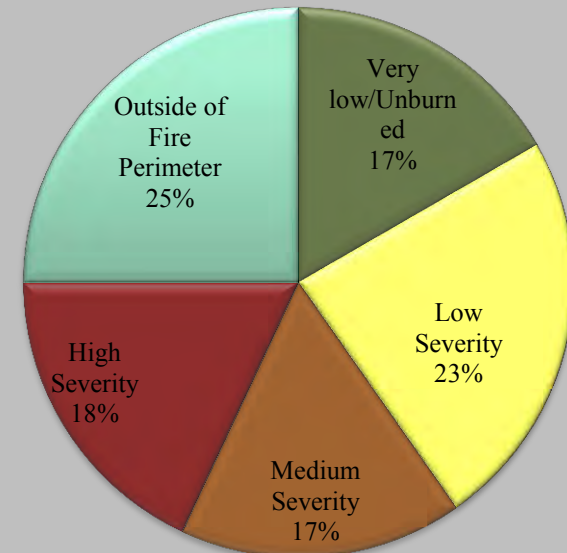
Bear 44-Male



Bear 61- Female

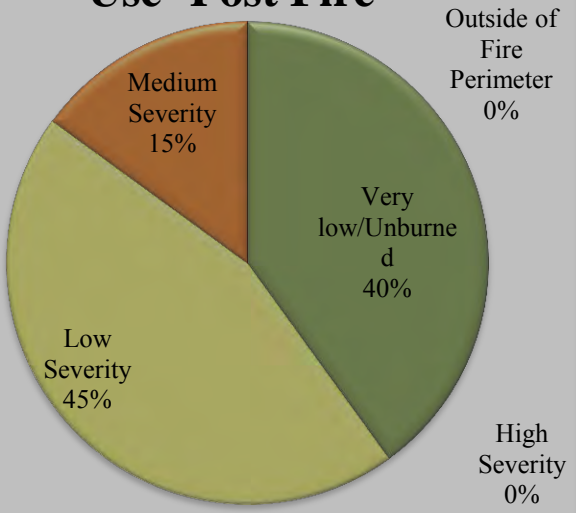


Bear 60-Female

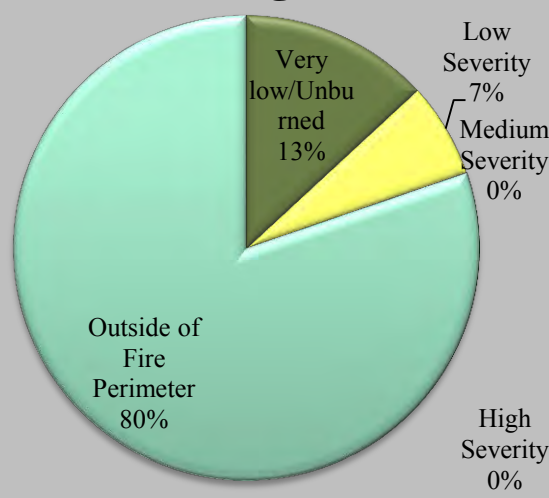


Bear Use of Fire Severities by Individual

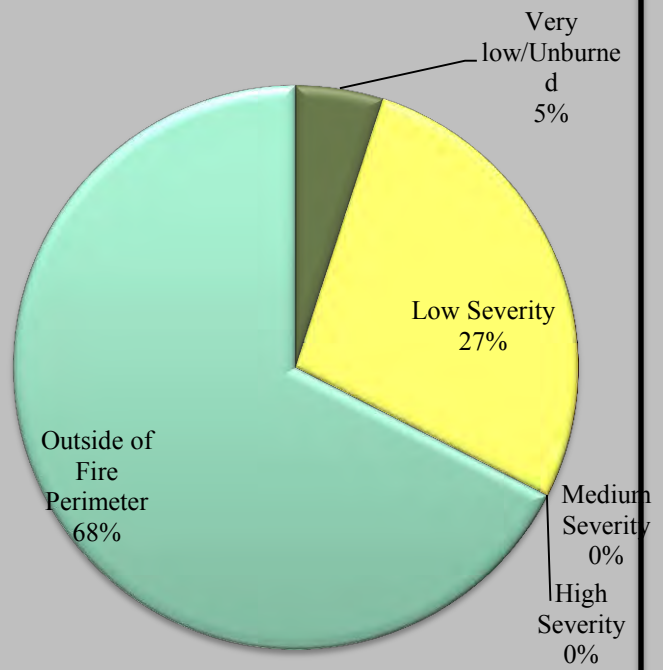
**Bear 40- Male
Use- Post Fire**



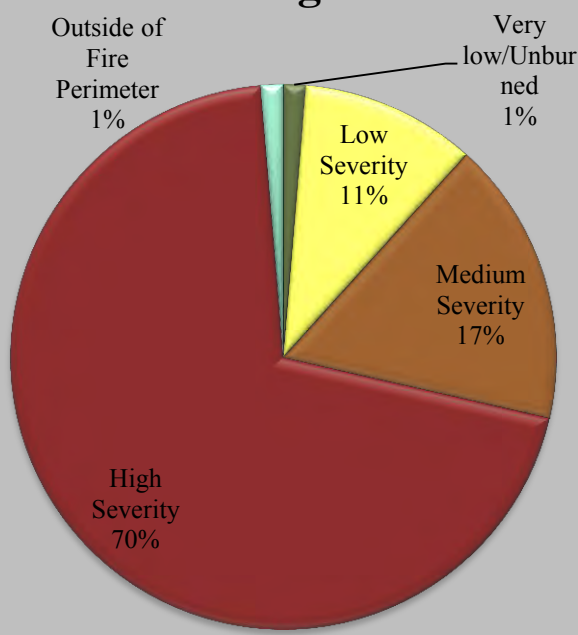
**Bear 40- Male
Use- Re-Vegetation**



**Bear 44-Male
Use- Post Fire**

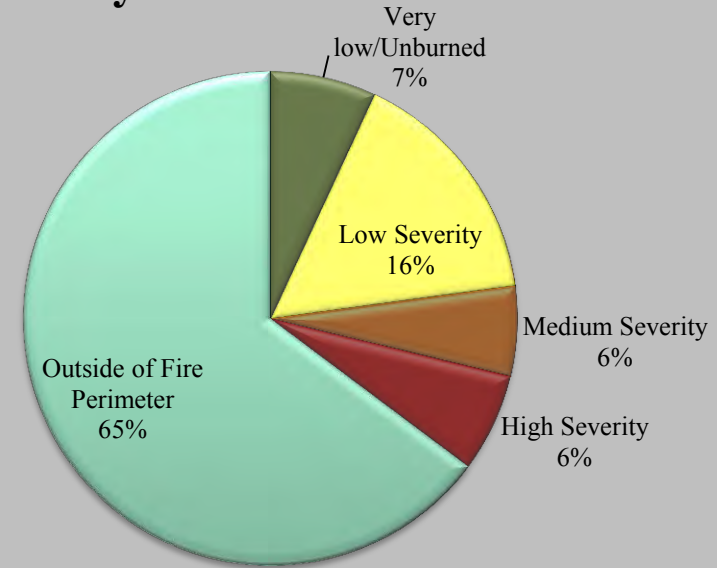


**Bear 44- Male
Use- Re-Vegetation**

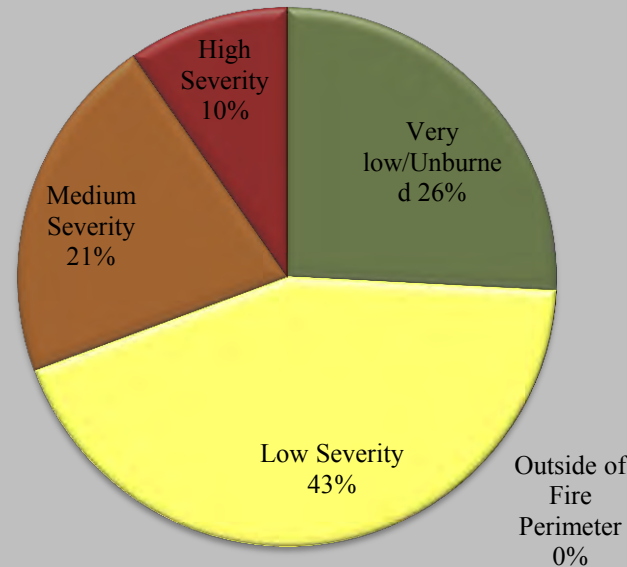


Bears Caught Post Fire- Use of Fire Severities

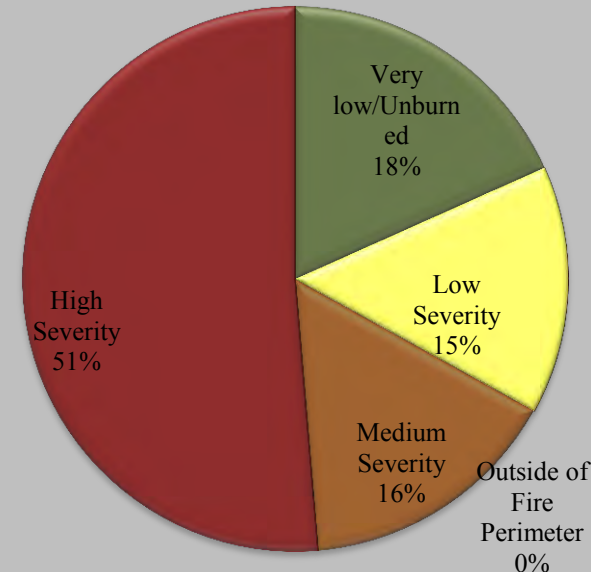
Availability of Different Fire Severities



Use- Post Fire July 9- August 17



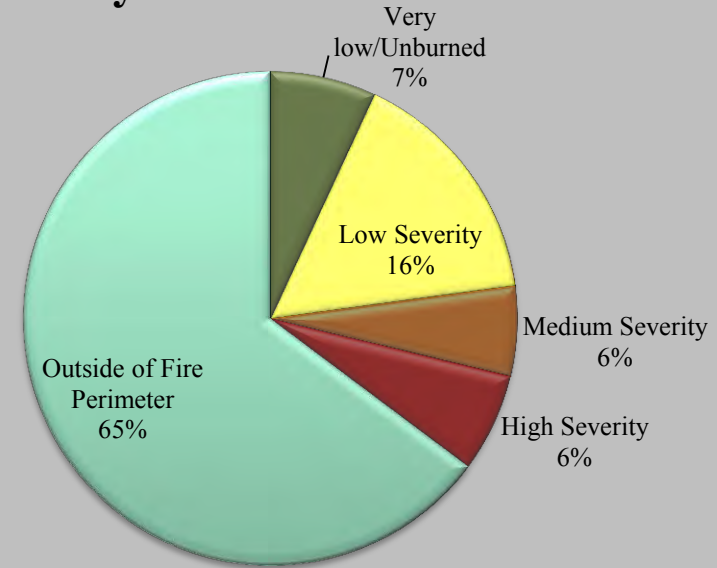
Use- Re-Vegetation August 18- November 16



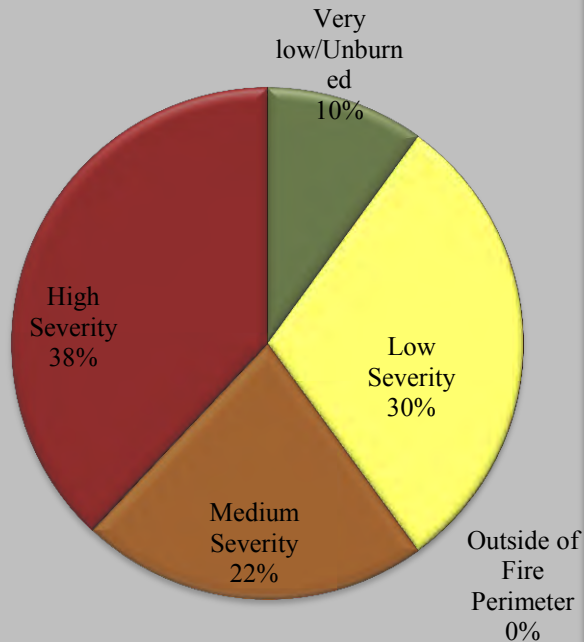
Bear Caught Post Fire-Use of Fire Severities Re-Vegetation

August 17-November 16

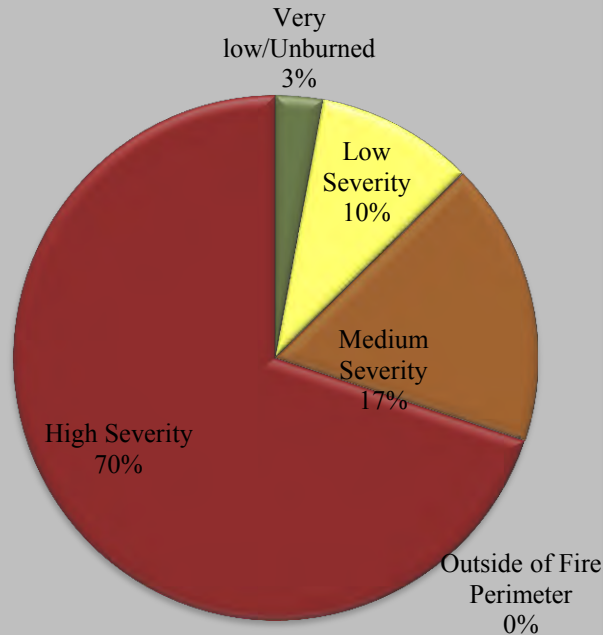
Availability of Different Fire Severities



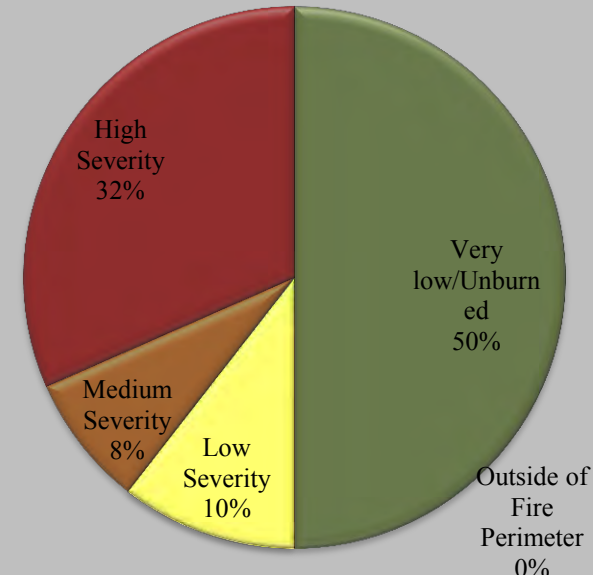
Bear 33- Female



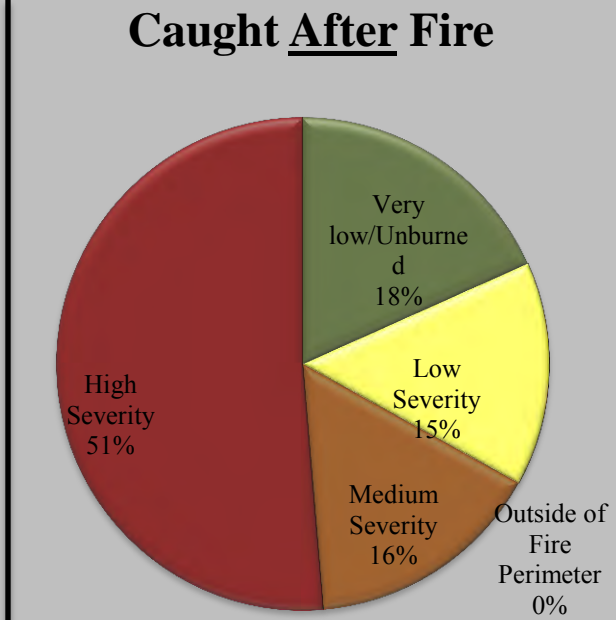
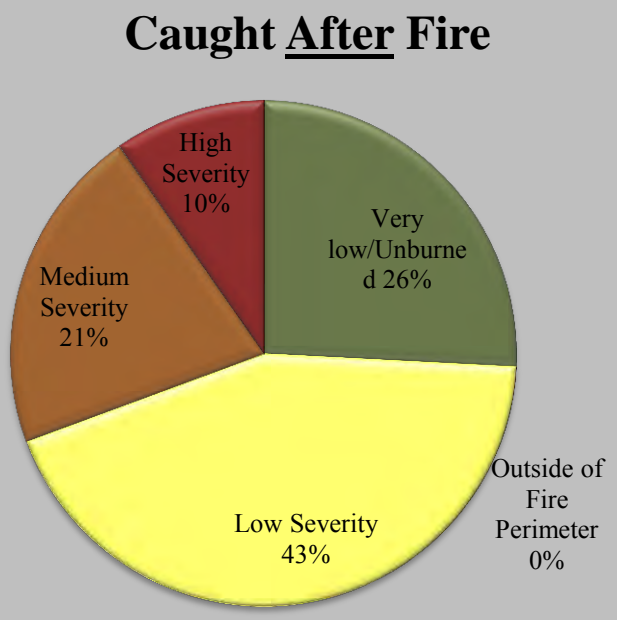
Bear 106- Female



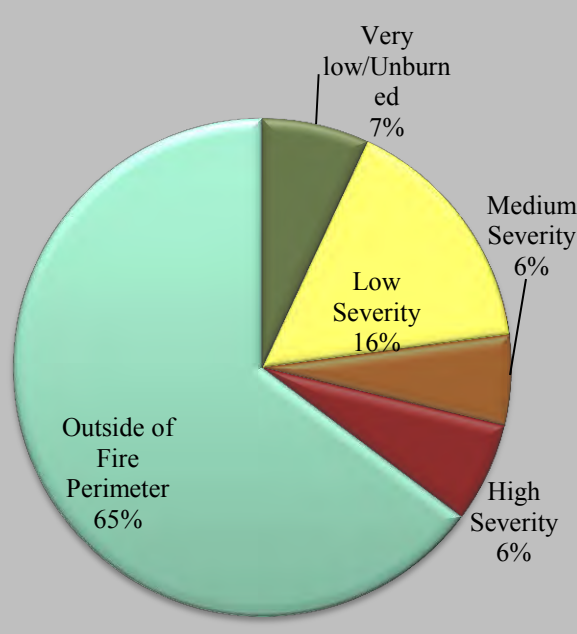
Bear 104- Female



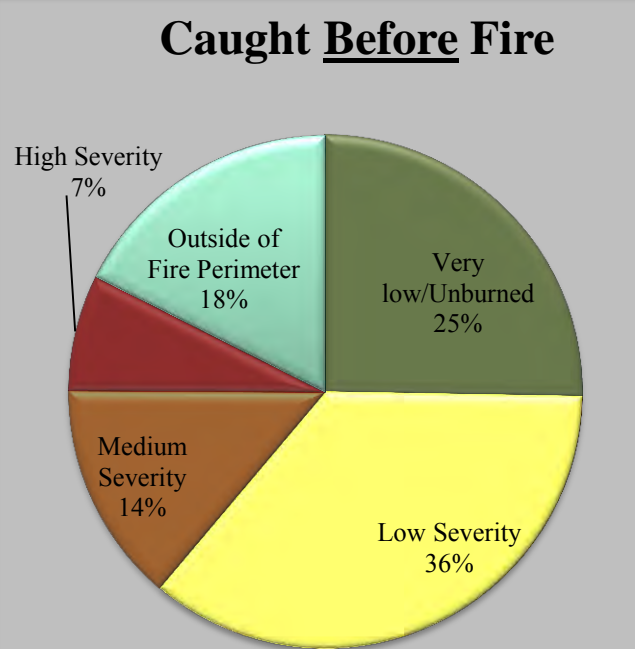
Bear Use of Fire Severities



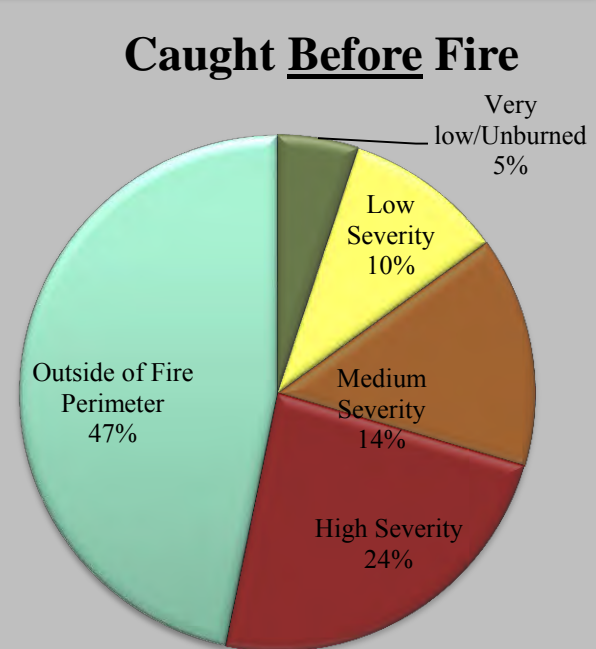
Availability of Different Fire Severities



Post Fire, July 9- August 17



ReVeg August 18- Nov 16



Preliminary Analysis

- Marked bears did not appear to flee from the approaching fire line and generally stayed within their home range
- After re-vegetation some marked bears appeared to favor areas with dense new grass

Next Steps...

- More quantitative approach



2009-05-29 4:03:04 PM M 9/30 83°F



WWW.RECONYX.COM

Questions

2009-05-30 11:23:49 AM M 17/30 88°F



WWW.RECONYX.COM

2010-06-12 9:37:07 PM M 30/30 46°F



WWW.RECONYX.COM

2009-05-29 4:04:29 PM M 4/30 83°F



WWW.RECONYX.COM

2009-05-30 11:18:29 AM M 25/30 87°F



WWW.RECONYX.COM



The End
(Caught July 28, 2011)